

SECOND AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. APPLN. NO. 09/832,794

**REMARKS**

Review and reconsideration on the merits are requested.

Applicants would like to thank the Examiner for the telephone interview granted concerning this application on October 31, 2003 where the Examiner indicated that with respect to independent claims 1 and 8, as they existed at the time of the Office of August 5, 2003, the rejection of these claims and any claims dependent therefrom would be avoided by filing the appropriate statement regarding common ownership. No other matters were discussed in any detail, rather, the telephone interview of October 31, 2003 simply went to avoiding U.S. Patent 6,551,441 Sato et al. (Sato) and U.S. Patent 6,523,246 Matsui et al. (Matsui) as prior art by establishing common ownership. The undersigned states:

Application 09/832,794 and U.S. Patent 6,551,441 Sato et al and U.S. Patent 6,523,246 Matsui et al. were, at the time the invention of Application 09/832,794 was made owned by Honda Giken Kogo Kabushiki Kaisha.

Applicants appreciate the Examiner's comments Paragraphs 2-3 of the present Action.

With respect **Claim Objections**, the informality noted in claim 8 is rendered moot by further amending claim 8 to include (essentially) a limitation as in claim 4. See the specification at page 3, lines 13-17 for support.

Applicants believe that establishing common ownership as above might avoid any rejection of claim 8 given the Examiner's remarks at page 6 of the action, second full paragraph, where the Examiner relies upon Sato to teach claim 4, but assuming this is not the case, Applicants do offer comments on the art rejections.

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The prior art considered:

WO 99/39976 of Dean et al. (Dean); U.S. 5,580,502 Forster; U.S. Patent 65,242,523

Willden. Sato and Matsui have been earlier identified.

The rejections: claims 1, 4 and 6 and 8 under 35 U.S.C. § 103(a) as being obvious over Dean in view of Forster and Sato and alternatively, Sato in view of Dean. In paragraph 7 of the Office Action

Claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Dean, Forster and Sato, or alternatively, Sato and Dean as applied to claim 1 further in view of Matsui. In paragraph 8 of the Office Action

Claims 1 and 4-6 under 35 U.S.C. § 103(a) as being unpatentable over Dean, Forster and Sato, or alternatively, Sato and Dean as applied to claim further in view of Willden. In paragraph 9 of the Office Action

Based on the results of the interview, technically, claim 8 potentially could still be rejected and Applicants treat the rejections over Dean in view of Forster of claim 8 below, offering additional comments on certain of the other rejections.

As described in the present specification, pages 2/3, a honeycomb sandwich panel as is conventionally used is generally formed under a pressure of approximately  $3\text{kg}/\text{cm}^2$ , and a stiffened panel is generally formed under a pressure of approximately  $6\text{ kg}/\text{cm}^2$ . When the honeycomb sandwich panel and the stiffened panel are formed at the same time under a low pressure such as  $3\text{kg}/\text{cm}^2$ , the stiffened panel is deteriorated in quality, and when they are formed at the same time under a high pressure such as  $6\text{ kg}/\text{cm}^2$ , an edge portion of a honeycomb core

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contained in the honeycomb sandwich panel is often unable to withstand the pressure, resulting in deformation (crushing) thereof (see page 2, line 28 to page 3, line 7 of the present specification).

In contrast to the above conventional method, the method recited in amended claim 8 of the present application makes it possible to produce a composite structure having a three-dimensionally curved portion and a cylindrical portion from a honeycomb sandwich panel and a stiffened panel at the same time under a pressure of 6-7 kg/cm<sup>2</sup>.

Turning to claim 1, most important feature of claim 1 is that the assembly is preferably formed by the heating under pressure while disposing an elastic plate and a press plate on a fin portion where the outer skin and the inner skin overlap each other, to prevent crushing of the honeycomb core, whereby a sufficiently lightweight composite having a three-dimensionally curved portion composed of a honeycomb sandwich panel and a cylindrical portion composed of a stiffened panel can be produced at the same time (emphasis added) (see page 3, lines 8-13 of the present specification).

Dean teaches, as indicated by the Examiner, a method for producing such a composite panel 18/62 shown in Fig. 12 or Fig. 27, each having a 3-D curved portion and a cylindrical portion.

Although the Examiner states that stiffeners 42, 54 intersect at junction 58 in Fig. 27 (Action page 4, lines 9-12), the junction 58 shown in Fig. 20, considered in view of Figs. 12 and 27 and with reference to Figs. 20A and 20C, does not teach such stiffeners 52, 54 intersecting at

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junction 58, though stiffener 42 is not shown. It is believed that this conclusion is clearly confirmed by the following disclosure which occurs in Dean at page 20:

"Fig. 20 shows a reinforcing structure that is of considerable strength having a backing sheet or base 52 and, on one side thereof, parallel spaced cross I stiffeners 54 and parallel spaced I stiffeners 56 at right angles to the stiffeners 54. The stiffeners 56 are closer together than the stiffeners 54. The stiffeners meet and cross at four junctions 58 (emphasis is added) (see page 20, lines 1-7 of Dean ).

Thus, Applicants believe that quite clear that Dean does not teach or suggest, as shown in the present specification (see page 4, lines 19-21 and page 10, lines 23-28 of the present specification): in Figs. 6 and 7(a)/(b) any type of combination of preformed frame members 8b, 8c and 8d and preformed stringer members 7a and 7b, and a forming jig 12, which forming jig comprises a combination of an elastic jig 13 and rigid jigs 14.

Turning to Forster, Forster teaches a method for fabricating a composite article having a composite stiffening member co-cure bonded in integral combination therewith where the composite article comprises outer mold line (OML) and inner mold line (IML) composite skins having a modified honeycomb core interposed therebetween. Forster utilizes a conventional vacuum bag method to prepare the layed-up fabrication for the co-curing cycle at a temperature of about 350°F (176.7°C) under a pressure of about 25 psi (1.167 kg/cm<sup>2</sup>) (emphasis added; see column 3, lines 40-46, column 9, lines 51-54, column 10, lines 5-13 and Fig. 4 in view of Fig. 1). Forster is silent regarding an assembly formed by arranging a preformed frame member and a preformed stringer member each made of a composite prepreg on a portion of the inner skin that

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forms the cylindrical portion and by heating the assembly under a high pressure such as 6-7 kg/cm<sup>2</sup> to carry out a co-curing cycle.

Thus, Dean and Forster each fail to teach, firstly, one major distinguishing feature of the present invention, namely, arranging a preformed framed member and preformed stringer member each made of a composite prepeg on a portion of the inner skin that forms the cylindrical portion to prepare an assembly and forming the assembly by heating under high pressure. Further, Dean and Forster each also fail to teach another major distinguishing feature of the present invention, namely, that the composite panel or article is preferably formed by heating under such a high pressure while disposing an elastic plate and a press plate on a fin portion where the outer skin and the inner overlap each other.

Accordingly, Dean in view of Forster would not motivate one of ordinary skill in the art to reach the invention of claim 1 nor, of course, claims 4 and 6.

Focusing specifically on amended claim 8, claim 8 includes, as important features, a composite structure having a 3-dimensionally curved portion and a cylindrical portion which can be produced from a honeycomb panel sandwich panel and a stiffened panel at the same time under a pressure of 6-7 kg/cm<sup>2</sup>.

Accordingly, for the same essential reasons advance for the patentability of claim 1, one of ordinary skill in the art considering the combination of Dean and Forster would not be motivated to reach the invention recited in amended claim 8.

Applicants now wish to address claim 5.

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Claim 5 of the present application recites, *inter alia*, “wherein a plurality of said preformed frame members are linearly arranged” and “one or more of said preformed stringer members passing through said interval and intersecting said preformed framed members” (emphasis added).

The Examiner indicates in Paragraph 8 of the Action, the first paragraph, lines 2-3, on page 7 that:

“the stiffeners 54 passing through the intervals and intersecting the stiffeners 42,” but as earlier described, Fig. 27 of Dean does not teach the stiffeners 54 passing through the intervals and intersecting the stiffeners 42, rather merely shows the stiffeners meeting and crossing at three junctions of one stiffener 54 and three stiffeners 42 (see Fig. 27 in view of Fig. 20)

It is thus not necessary at the junction 58 in Fig. 27 of Dean to use a forming jig comprising a combination of an elastic jig engageable with the intersection of the preformed frame members and the preformed stringer member, with rigid jigs attachable to the preformed frame members and the preformed stringer member in portions other than the intersection.

Accordingly, Applicants respectfully submit that claim 5 is not rendered obvious over the remaining affective prior art relied upon by the Examiner.

Applicants would now like to address page 8 of the Action.

The Examiner states at lines 4-7 in paragraph 9, lines 4-7, on page 8 of the Office Action, that:

“With respect to claims 1, 6 and 8, it is noted the Examiner interpreted the “stiffeners” of Dean to encompass frames and stringers, which are well-known and conventional in the art as set forth in the 103 rejection above.”

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Applicants respectfully submit this particular interpretation to be erroneous, as earlier discussed, and offer the following additional comments.

Dean fails to teach not only a plurality of preformed frame members linearly arranged at an interval on the portion of the inner skin that forms the cylindrical portion, but also one or more preformed stringer member passing through the interval and intersecting the preformed frame members as recited in claim 1 of the present application, rather, Dean merely shows cross I-stiffeners 54 and I-shaped stiffeners 42 extending parallel to each other from the top to the bottom with two of those stiffeners extending across the honeycomb and one passing aft of the honeycomb, where the stiffeners 54 and 42 meet and cross at three junctions of one cross I-stiffener 54 and three I-shaped stiffeners 42, each junction having a square hollow section (emphasis added) (see page 20, lines 1-21, page 22, lines 1-5 and lines 11-13, and Fig. 27 in view of Figs. 20, 20C and 21).

Accordingly, Applicants believe its clear that the cross I-stiffeners 54 and I-shaped stiffeners 42 shown in Fig. 27 of Dean are completely different from a criss-crossing structure composed of the corresponding frames 26, 28, 30 and the corresponding stringers 14, 16, 18 located on the surface 44 of the skin 12, respectively, as shown in Fig. 10 of Willden. (See Abstract, lines 1-4, column 4, lines 58-65 and Fig. 3).

Further, Willden does not teach or suggest an assembly preferably formed by heating under pressure while disposing an elastic plate and a press plate on a fin portion where the outer skin and the inner skin overlap each other.

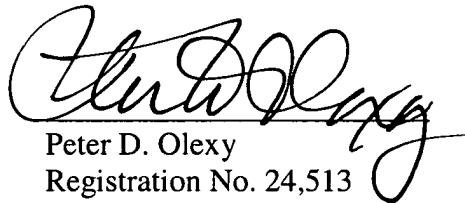
Withdrawal of all rejections and allowance is requested.

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In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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